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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,328	03/03/2004	B. Ramamurthy Acharya	3123-548	4378

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Marsh Fischmann & Breyfogle LLP  
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EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/792,328

Applicant(s)

ACHARYA ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 35-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/2/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-34 in the reply filed on 5/16/06 is acknowledged. The traversal is on the ground(s) that a variety of magnetic layer properties are included within the scope of claims 1-34. Therefore, Applicant argues that it would not impose a serious burden to examine claim 35-41 in conjunction with claims 1-34. This is not found persuasive because the scopes of claim 1 and claim 35 differ not only in the recitation of a specific property in claim 35, but also in that claim 1 is limited to a structure having anti-parallel coupling between magnetic layers. Claim 35 is not limited to such a structure. The differences between the two groups of claims are significant. Therefore, the examiner maintains the position that examination of all of the claims would impose an undue burden on the Office.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 and 26 require a permeability of at least about 50. However, there are no units required. Thus, the metes and bounds of this claim are not clearly defined.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 20-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Shukh et al. (US 6818330).

Shukh et al. disclose a magnetic recording medium having a substrate formed from a material such as NiP-plated Al, an underlayer structure formed from alternating soft magnetic layers separated by non-magnetic spacer layers such as Ru, wherein the soft magnetic layers are anti-ferromagnetically coupled across the spacer layers, and further including a perpendicular recording layer formed on the underlayer structure via an intermediate layer. See col. 4, lines 39-62; col. 5, lines 6-18; col. 6, lines 1-11 and 45-52.

6. Claims 1, 3-16, 20-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Futamoto et al. (US 6686070).

Futamoto et al. disclose a magnetic recording medium having a substrate, an underlayer structure formed from alternating soft magnetic layers separated by non-magnetic spacer layers such as Ru, wherein the soft magnetic layers are anti-ferromagnetically coupled across the spacer layers, and further including a perpendicular recording layer formed on the underlayer structure via an intermediate layer. The reference teaches examples wherein the first soft magnetic layer

(corresponding to the first soft magnetic layer in claim 1) has a thickness of 150 nm and the second soft magnetic layer has a thickness of 40 nm. See Fig 1, 3, 6, 7; col. 5, lines 8-52; col. 10, line 47 to col. 11, line 3; Table 2, col. 11-12.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futamoto et al., as applied above, in view of Shukh et al. (US 6818330).

Futamoto et al. teaches all of the limitations of the claims except for the use of a NiP/Al substrate and the use of an exchange enhancement layer between the non-magnetic spacer layer and the second soft magnetic layer.

Shukh et al. teaches the equivalence of various materials such as NiP/Al and glass for use as a substrate in a magnetic recording structure (col. 4, lines 42-46). It would have been obvious to one of ordinary skill in the art at the time of invention to substitute NiP/Al for the glass substrate taught by Futamoto et al. in view of the art recognized equivalence of the two materials as taught by Shukh et al. Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Grover Tank & Mfg. Co. Inc V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Shukh et al. also teaches that it is known in the art to add exchange enhancement layers in between soft magnetic layers and non-magnetic spacer layers in an antiferromagnetically coupled underlayer structure in order to increase the exchange coupling effect between adjacently coupled soft magnetic layers (col. 2, line 55 to col. 3, line 5).

It would have been obvious to one of ordinary skill in the art at the time of invention to add exchange coupling layers as suggested by Shukh et al. to the structure taught by Futatmoto et al. in order to increase the observed exchange coupling effect.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Futatmoto et al. (US 2004-0062953) and Carey et al. (US 6835475) are cited as relevant prior art.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized, cursive script.

Holly Rickman  
Primary Examiner  
Art Unit 1773